



INSA NEWS

Issue 78

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Professor C N R Rao, President, INSA releasing the prestigious publication of the Academy "Profiles in Scientific Research : Contributions of the Fellows" on October 1, 1986 (see overleaf).

INDIAN NATIONAL SCIENCE ACADEMY
BAHADUR SHAH ZAFAR MARG
NEW DELHI

PROFILES IN SCIENTIFIC RESEARCH: CONTRIBUTIONS OF THE FELLOWS

The two-volume publication '*Profiles in Scientific Research*' brought out by the Indian National Science Academy (INSA), New Delhi, gives comprehensive, yet concise accounts of the major research accomplishments of 441 contemporary Fellows of INSA representing various subjects. This compendium is the first ever attempt made in the country to consolidate information concerning a large section of leading scientists covering their research work. The contributions are authentic reports supplied by the concerned Fellows highlighting their important research activities and achievements. The publication will be of immense value to a large number of users of scientific literature—research

scientists, teachers, students, historians of science and documentationists. The contributions are supplemented with lists of publications provided by the Fellows of their high-ranking research papers. This collection of about 7000 references enhances the value of this compendium considerably and is a ready-to-use bibliography of important Indian contributions in different disciplines of science.

Elegantly printed and sturdily bound, this two volume publication would be a priceless addition not only to any library catering to the information needs of research workers but also to the personal collections of individual scientists.

SUBJECT COVERAGE

VOLUME 1

Mathematical Sciences (Applied and Pure Mathematics, Statistics)

Physics (Astronomy & Astrophysics including Space Physics, Theoretical Physics, Materials Science, Atomic and Molecular Physics)

Chemical Sciences (Analytical, Inorganic, Physical and Theoretical Chemistry).

Engineering & Technology (Chemical Technology, Electronics and Telecommunication, Engineering Sciences)

Earth Sciences (Atmospheric Sciences, Geography, Geosciences, Oceanography)

Price: Rs 500.00 (US \$ 165.00) for the set of 2 of volumes; per volume Rs 250.00 (US \$ 85.00)

Orders for the publication may be placed with Dr M Dhara, Associate Editor, Indian National Science Academy, Bahadur Shah Zafar Marg, New Delhi-110002.

VOLUME 2

Plant Sciences (Including Genetical, Ecological, Taxonomical and Evolutionary Aspects)

Animal Sciences (Including Genetical, Ecological, Behavioural, Taxonomical and Evolutionary Aspects)

Medical Sciences (Including Anthropology, Psychology)

Biochemistry and Biophysics (Including Molecular Biology, Microbiology and Immunology)

Agricultural Sciences (Including Animal husbandry, Fisheries and Forestry).

Published : July 1986;

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Vol. 2 : pp xii + 843-1562.

The money may be sent by Demand Draft/Cheque payable to Indian National Science Academy, Bahadur Shah Zafar Marg, New Delhi-110002.

Presidential Remarks

I am delighted that the Academy has been able to bring out several useful publications in recent months. The book on **"Science in India"** has been specially appreciated by a large number of Fellows and others. I am very happy that we have been able to bring out two volumes entitled **"Profiles in Scientific Research"** describing the contributions of the Fellows of the Academy. This is the first authentic publication of this kind based on scientific research in the country described by the scientists who have carried out the work. I have no doubt that this will be a most useful document. I am most grateful to all the Fellows who have cooperated in bringing out these volumes. Even some of the sceptics did eventually contribute. I realise that there is a small number of Fellows whose contributions are not in these volumes. Unfortunately, this can only be rectified when a supplement is published in another 3 or 4 years. It may be a good idea to bring out a new version of the profiles in another 10 years. I have great pleasure in releasing "Profiles in Scientific Research".

The Academy has just instituted a new prize for popularization of Science in memory of Smt. Indira Gandhi. I hope this prize will be a coveted award given to the most capable writers and producers of various types of popular science material in English, Hindi or regional languages. I request the Fellows to take interest to ensure that there are good nominations for this award. The Academy has also instituted many other important medals and prizes, including two recent ones for materials science and medicinal chemistry.

I am very happy that India will soon be able to have its own countryman as President of ICSU. I am referring to the election of Professor M G K Menon, past President of the Academy, as President-elect of ICSU. I am sure that the Fellowship joins me in rejoicing this wonderful happening.

I would like to touch upon an issue that has bothered me in recent times. This relates to the decreasing number of scientists working in experimental physical science and engineering. I have no doubt that this will be very bad for the future of the science and technology in the country. We have to do everything possible to promote experimental work. Without this, the future of science itself, especially engineering design and instrumentation will be disastrous. We have to promote design and fabrication of instruments, for without the instrumentation culture, we may never be able to make a major impact in the world of science. This is particularly relevant now when we are about to celebrate the Centenary of the greatest experimental scientist of the country, Professor Raman.

The Raman Centenary will be in 1988. Professor Raman created science when there was little science in the country. He contributed to a variety of areas in experimental physical science. The Academy has to suitably celebrate his Centenary in cooperation with other scientific bodies. I am happy that the Academy will be publishing a book on the **"Life and Physics of Raman"** written by Dr G Venkataraman. In 1987 we shall be celebrating the Centenary of one of the greatest mathematicians of the world, Srinivasa Ramanujan. The Academy has to suitably celebrate this Centenary and find an author to write an authoritative book on Ramanujan's life and work.

Before I close, I would like to touch on an item which may not find complete support from all quarters. However, I believe that time has come for me to publicly express my serious concern about the status of our scientists, especially the Fellows of the Academy. I often find Fellows of the Academy not having sufficient funds to subscribe to journals and professional societies, to prepare manuscripts and so on. I feel that the Academy should pay an

annual tax-free allowance to each Fellow during his/her life time. At present, I consider about Rs. 6,000/- per annum may be adequate for the purpose. I hope that I will have the support of the Council and the powers concerned in making this reality. I realise that what I have suggested is only

symbolic, but I am also conscious of the tremendous responsibility that the Academy and the Fellowship will have to bear to ensure that everything we do represents the highest quality expected of us.

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INSA BURSARY SCHEME

The Indian National Science Academy invites applications from individual scientists for the award of INSA Bursary Scheme (non-recurring) under which crucial grant upto Rs 40000/- can be sanctioned by the Academy for the purchase of equipments, components, and accessories, chemicals and such other items or to organize small group discussion of professional colleagues on important aspects of research and development or any other significant activity related to research.

Application forms of the Bursary grant may be obtained from the Project Officer (B.S.) Indian National Science Academy, Bahadur Shah Zafar Marg, New Delhi-110002.

Requests received for the Bursary grant will be considered by the Academy from time to time.

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Council Diary

Minutes of the Annual General Meeting of the Indian National Science Academy held at 3.00 p.m. on Wednesday, the 1st October, 1986 at INSA, New Delhi.

Fellows present :

Professor C N R Rao, President
Professor A K Sharma, Immediate Past-President
Professor R R Daniel, Vice-President
Professor P N Srivastava, Treasurer
Dr T N Khoshoo, Foreign Secretary
Dr I P Abrol
Dr Y P Abrol
Professor U C Agarwala
Professor J Bamabas
Dr R Chidambaram
Professor C M S Dass
Dr P K Das
Professor V K Gaur
Professor B P Ghildyal
Professor S S Guraya
Professor J N Kapur
Professor S S Katiyar
Professor L S Kothari
Dr C R Krishnamurti
Professor R A Mashelkar
Professor S N Mitra
Dr B P Pal
Professor R S Paroda
Professor M S Raghunathan
Dr P Rama Rao
Prof L K Ramachandran
Dr (Mrs) K J Ranadive
Professor (Mrs) Archana Sharma
Professor M P Singh
Professor N S Subba Rao
Dr Sukh Dev
Professor K S Valdiya
Dr A R Verma
Professor M A Viswamitra
Professor S K Joshi, Secretaries
Professor H Y Mohan Ram, Secretaries

Condolence on the passing away of Dr N Ramanathan, an Emeritus Scientist and Fellow of the Academy.

The death of Dr N Ramanathan, FNA was condoled. All present stood in silence for one minute as a mark of respect to the deceased.

Confirmation of the minutes of the Ordinary General Meeting held on 5 August 1986 at National Chemical Laboratory, Pune.

The minutes of the Ordinary General Meeting held on 5 August 1986, ready by Professor S K Joshi (Secretary) were confirmed.

Scrutiny of voting paper for election of Officers and members of the Council for the year 1987 and announcement of the result.

The President nominated Dr R A Mashelkar, Dr L S Kothari and Professor C M S Dass as scrutineers, and election to INSA Council 1987 of those listed in Appendix-I was announced.

Announcement of the result of the scrutiny of voting paper for election of Fellows 1986.

The election of those listed in Appendix-II as Fellows of the Academy was announced.

Announcement of the result of the scrutiny of voting paper for election of Foreign Fellows 1986.

The election of those listed in Appendix-III as Foreign Fellows of the Academy was announced.

Announcement of the award of INSA Endowment Lectureships.

The awards of INSA Endowment Lectureships for 1986 to the following were announced :

Professor R K Asundi Memorial Lecture	Professor P T Narasimhan, FNA
Professor T S Sadasivan Lecture	Professor B M Johri, FNA
Professor B D Tilak Lecture	Dr C V Seshadri, Shri A M M Murugappa Chattiar Research Centre Madras.

Announcement of the award of INSA Research Fellowship 1987.

The award of INSA Research Fellowships 1987 to the following was announced :

Dr C Jayabaskaran,
Lecturer, Department of Biochemistry,
Indian Institute of Science,
Bangalore-560012.

Dr S Sarkar
Assistant Professor of Chemistry
Indian Institute of Technology
Kanpur-208016.

Dr S Dattagupta
Professor in Physical Sciences
Jawaharlal Nehru University
New Delhi.

Announcement of the awards under INSA Senior Scientists Scheme 1987.

The awards under INSA Senior Scientists Scheme to Professor J N Kapur, Dr A R Verma, Professor D D Awasthi, Professor T N Ananthakrishnan, Professor T Ramakrishnan and Dr S Sriramachari were announced.

Announcement of the nomination of representatives of Cooperating Academies on the INSA Council 1987.

The nomination of the following as representatives of the Cooperating Academies on the Council of the Indian National Science Academy for 1987 was announced :

Indian Science Congress
Association, Calcutta

Dr D N Kundu, FNA

Asiatic Society, Calcutta

Dr A K Saha, FNA

National Academy of Sciences
(India) Allahabad.

Professor U S Srivastava, FNA

Submission of the list of Fellows corrected up-to-date.

The Secretary (Professor S K Joshi) submitted a list of Fellows, corrected up to October 1, 1986. He reported that there are 538 Fellows as on that date. A copy of the list would be available in the Library and further updated version would be printed in the Year Book 1987.

To read as required under Rule 45(c) the names of candidates for consideration of election to Fellowship.

Professor S K Joshi, Secretary, INSA read the names of the following whose nomination papers have been received in the Academy since the last General Meeting for consideration for election to Fellowship :

<i>Name of the nominee</i>	<i>Date of receipt</i>	<i>Proposed by</i>
K N Srivastava	5.8.1986	L S Kothari
A K Gupta	18.8.1986	V K Gaur
K K Framji	18.8.1986	Dinesh Mohan
B K Agarwal	3.9.1986	C L Khetrapal
R P Sharma	8.9.1986	U R Ghatak
U R Nayak	8.9.1986	Sukh Dev
A Chatterjee	15.9.1986	D Nasipuri
D K Choudhuri	17.9.1986	G K Manna
K L Goyal	22.9.1986	Hari Narain

Admission of Fellows under Rule 13

Professor M P Singh, FNA was introduced by Professor J N Kapur, FNA and was admitted to the Fellowship.

Presentation of the Report of the Academy for the year 1985-86.

A report of the Council for the year 1985-86 was presented by Professor H Y Mohan Ram (Secretary).

Review of the work of the Academy by the President.

The President reviewed the work of the Academy.

Any other item

Confirmation of the filling up the interim vacancy in the Council during 1987-88.

The suggestion of the Council for filling up an interim vacancy for the remaining period of 1987-88 to include Professor J V Narlikar, FNA in the Council was confirmed. This vacancy was caused by election of Professor V L Chopra as Editor of Publications from 1987 onwards for a period of 4 years.

Announcement of the Professor L S S Kumar Memorial award for 1987.

The award of Professor L S S Kumar Memorial Award for the year 1986 to Dr R S Upadhyay, Lecturer in Botany, Centre of Advanced Study in Botany, Banaras Hindu University, Varanasi was announced.

To report appointment of staff under rule 43 (d)

The appointment of Dr V C Vora as Executive Secretary, INSA with effect from November 3, 1986 was reported. Dr Vora, PhD (London) has served the Council of Scientific & Industrial Research as Deputy Director of Central Drug Research Institute,

Lucknow and later as Director, Institute of Microbial Technology, Chandigarh.

Release of the two-volume publication 'Profiles in Scientific Research—Contributions of Fellows'.

The President, INSA, formally released the two-volume publication 'Profiles in Scientific Research—Contributions of Fellows'. It was announced that each Fellow of the Academy would receive both the volumes of this publication free of cost.

The meeting ended with a Vote of Thanks to the Chair.

President

Secretaries

Appendix I

INSA Council (1987)

<i>Name and address</i>	<i>Position</i>	<i>Name and address</i>	<i>Position</i>
Dr A S Paintal Director General Indian Council of Medical Research Ansari Nagar New Delhi-110029	President	Dr T N Khoshoo 81, Shahjahan Road New Delhi-110011	Foreign Secretary
Dr B K Bachhawat Professor & Head Deptt. of Biochemistry University of Delhi (South Campus) New Delhi-110021	Vice-President	Professor H Y Mohan Ram Department of Botany University of Delhi Delhi-110007	Secretary
Professor M M Sharma Deptt. of Chemical Technology University of Bombay Matunga Bombay-400019	Vice-President	Professor P K Das Professor of Meteorology Indian Institute of Technology, Hauz Khas New Delhi-110016	Secretary
Professor P N Srivastava Vice-Chancellor Jawaharlal Nehru University New Delhi-110067	Treasurer	Professor V L Chopra Professor of Genetics Indian Agricultural Research Institute New Delhi-110012	Editor of Publications
		Professor D V S Jain Professor of Physical Chemistry Panjab University Chandigarh-160014	Editor of Publications

<i>Name and address</i>	<i>Position</i>	<i>Name and address</i>	<i>Position</i>
Professor A Chakravorty Professor & Head Deptt. of Inorganic Chemistry Indian Association for the Cultivation of Science, Calcutta-700032	Member	Dr N K Notani Associate Director Biomedical Group and Head Molecular Biology & Agricultural Division Bhabha Atomic Research Centre Bombay-400085	Member
Professor S Chandrasekhar Raman Research Institute Bangalore-560080	Member	Professor V Rajaraman Chairman Computer Centre Indian Institute of Science Bangalore-560012	Member
Professor (Mrs) Asima Chatterjee Programme Coordinator UGC Centre of Advanced Studies on Natural Products University College of Science Calcutta University Calcutta-700009	Member	Dr P Rama Rao Director Defence Metallurgical Research Laboratory P O Kanchanbagh Hyderabad-500258	Member
Professor V K Gaur Director National Geophysical Research Institute, Hyderabad-500007	Member	Professor L K Ramachandran Professor of Biochemistry Osmania University Hyderabad-500007	Member
Professor N Gopinath F 44, Preet Vihar Delhi-110092	Member	Dr (Mrs) K J Ranadive 1/27 Nishigandh MIG Colony W Express Highway Bandra East Bombay-400051	Member
Professor S S Guraya College of Basic Sciences and Humanities Punjab Agricultural University Ludhiana-141004	Member	Professor C S Seshadri Institute of mathematical Sciences Adyar Madras-600013	Member
Professor R A Mashelkar Deputy Director & Head Chemical Engineering Division National Chemical laboratory Pune-411008	Member	Dr Sukh Dev Director Multi-Chem. Research Centre Nandesari-391340	Member
Professor S S Merh M S University of Baroda Baroda-390002	Member	Professor J P Thapliyal Department of Zoology School of Life Sciences North Eastern Hill University Shillong-793014	Member
Professor N Mukunda Centre for Theoretical Studies Indian Institute of Science, Bangalore-560012	Member	Professor C N R Rao Director Indian Institute of Science Bangalore-560012	Immediate Past-President
Professor J V Narlikar Tata Institute of Fundamental Research Bombay-400005	Member		

Representatives of Cooperating Academies

Dr D N Kundu P/66, CIT Scheme VI-M Calcutta-700054	Indian Science Congress Association
Professor A K Saha Professor of Nuclear Physics Saha Institute of Nuclear Physics 92, Acharya Prafulla Chandra Road Calcutta-700029	Asiatic Society
Professor U S Srivastava 100 B, C S P Singh Marg, Allahabad-211002	National Academy of Sciences, India

Appendix II

Fellows elected at the Annual General Meeting held on 1 October 1986 (effective from 1st January 1987)

Professor S S Abhyankar, Professor & Head, Department of Mathematics, University of Poona, Pune-411007.

—one of the finest mathematicians today known for his work on the resolution of singularities in positive characteristic.

Dr V Arunachalam, National Fellow (ICAR), IARI Regional Station, Rajendranagar, Hyderabad-500030.

—Dr Arunachalam has pioneered the application of biometrical methods for efficient classification of germplasm and for affecting crop improvement.

Professor U C Chaturvedi, Professor in Pathology and Bacteriology, K G Medical College, Lucknow-226003.

—for the elucidation of host immune mechanisms in viral infections, specially dengue virus.

Professor B M Deb, Professor of Theoretical Chemistry, Department of Chemistry, Panjab University, Chandigarh-160014.

—for his contributions to theoretical chemistry particularly force concept and density functional theory.

Dr B S Gill, Special Director of Research, (Veterinary and Animal Sciences), Punjab Agricultural University, Ludhiana-141004.

—Dr Gill is known for his contributions on disease control of cattle and development of vaccines against the same.

Shri D Guptasarma, Scientist, F, National Geophysical Research Institute, Hyderabad-500007.

—for his original and conceptually imaginative design of novel geophysical instruments and exploration methodologies.

Dr K K Kannan, Scientific Officer, Neutron Physics Division, Bhabha Atomic Research Centre, Bombay-400085

—for important contributions to protein crystallography.

Professor P C Kesavan, Professor, School of Life Sciences, Jawaharlal Nehru University, New Delhi-110067.

—for his work in the field of protection and potentiation of radiation damage in plant systems.

Professor Shrikant Lele, Professor, Department of Metallurgical Engineering, Institute of Technology, Banaras Hindu University, Varanasi-221005.

—for his analysis of X-ray diffraction effects due to structural imperfections and his work on phase transformations and thermodynamics of alloys.

Professor A P Maitra, Director, Indian Statistical Institute, 203, B T Road, Calcutta-700035.

—his work on selectors for Borel sets with large sections is perhaps the final word for sometime to come.

Dr K K G Menon, Director, Hindustan Lever Research Centre, Chakala, Andheri East, Bombay-400049.

—for his contributions in the area of lipid metabolism, novel findings on the role of lipoic acid and in the application of science in industry.

Professor S Mitra, Associate Professor, Tata Institute of Fundamental Research, Bombay-400005.

—for his contributions to magnetic studies of transition metal compounds particularly metalloporphyrins.

Professor S K Mukherjee, Professor of Eminence, Division of Agr. Chemicals, Indian Agricultural Research Institute, Pusa, New Delhi-110012.

—Professor Mukherjee has made significant contributions to the chemistry of natural products of plant origin mainly polyphenols, agricultural chemicals, insecticides and synergists. He has developed a new biogenetic theory of neoflavonoids.

Professor D Mukhopadhyay, Professor of Geology, Department of Applied Geology, Indian School of Mines, Dhanbad-826004

—for significant reevaluation of the structural complexities of the Indian precambrian terrains and a novel approach to finite strain analysis in rocks.

Professor M L Munjal, Associate Professor, Department of Mechanical Engineering, Indian Institute of Science, Bangalore-560012.

—for his contributions to the aerostatic and finite wave analysis of vibration and noise characteristics of complex flow passages.

Professor B C Nakra, Professor of Mechanical Engineering and Head, ITMMEC, Indian Institute of Technology, Hauz Khas, New Delhi-110016.

—for his contributions to vibration analysis and control with special reference to the use of visco elastic materials.

Professor N S Narasimhan, Professor, Department of Chemistry, University of Poona, Pune-411007.

—for his contributions to synthetic organic reactions particularly lithiation reactions.

Professor Narendra Kumar, Professor of Physics, Physics Department, Indian Institute of Science, Bangalore-560012.

—for his contributions in theory of energy transport in glassy state, localization and quantum diffusion.

Professor J D Padayatty, Professor, Department of Biochemistry, Indian Institute of Science, Bangalore-560012.

—for his work on rice histone, t-RNA and ribosomal genes.

Professor T J Pandian, Professor of Biology, Madurai Kamaraj University, Madurai-625021.

—for his contributions in energy transformation in poikilotherms and development of predictive models to describe their bioenergetics.

Professor Phoolan Prasad, Professor, Department of Applied Mathematics, Indian Institute of Science, Bangalore-560012.

—for his contributions in the study of central hyperbolic systems of quasilinear partial differential equations.

Dr V S Ramamurthy, Scientific Officer (SG), Nuclear Physics Division, Bhabha Atomic Research Centre, Bombay-400085.

—for his contributions in both experimental and theoretical nuclear physics like fragment mass distribution in fission and washing out of shell effects in excitation energy.

Dr P Ratnasamy, Head, Inorganic Chemistry Division, National Chemical Laboratory, Pune-411008.

—for his contributions to the development of zeolite catalysts and their industrial applications in hydrocarbon conversions.

Professor A K Raychaudhuri, Professor, Department of Physics, Presidency College, Calcutta-700073.

—Raychaudhuri's Equation was the starting point for work on singularity theorems by Penrose and Hawking.

Professor P N Saxena, Senior Professor and Chairman, Department of Pharmacology, Aligarh Muslim University, Aligarh-202001.

—for the discovery of hypnotic activity of methaqualone. His work on the role of prostaglandins and cations in central thermoregulation is original.

Professor R V Shah, Professor and Head, Department of Zoology, Faculty of Science, M S University of Baroda, Baroda-390002.

—for his studies in the field of regeneration in reptiles and development of feather in birds.

Professor C M Srivastava, Professor, Department of Physics, Indian Institute of Technology, Bombay-400076.

—for his contributions in areas like high precision ferromagnetic resonance and use of Mossbauer spectroscopy to study domain wall motion.

Professor G S R Subba Rao, Professor & Chairman, Department of Organic Chemistry, Indian Institute of Science, Bangalore-560012.

for his contributions to synthetic organic chemistry particularly applications of metal ammonia reduction

Professor Anupam Varma, Professor, Advance Centre for Plant Virus Education & Research, Indian Agricultural Research Institute, New Delhi 110012.

- for his contributions to the structure of flexible and anisometric viruses and plant diseases caused by mycoplasma

Professor M Vijayan, Professor, Molecular Biophysics Unit, Indian Institute of Science, Bangalore 560012.

- for contributions to the study of structure and interaction of biomolecules

Appendix III

Foreign Fellows elected at the Annual General Meeting held on 1st October 1986 (Effective from January 1, 1987)

Academician N G Basov, Director, Lebedev Institute, Moscow

Professor David De Wied, Rudolf Magnus Institute for Pharmacology, Medical Faculty, University of Utrecht, Vondellaan 6, 3521 GD Utrecht, The Netherlands.

Academician Dusan Kanazir, President, The Serbian Academy of Sciences and Arts, Belgrade, Yugoslavia.

Professor J K Kostrzewski, President, Polish Academy of Sciences, Warsaw, Poland.

Sir George Porter, President, The Royal Society, 6 Carlton House, Terrace, London, SW1Y, 5AG, U.K.

Professor Itiro Tani, Aeronautical Engineer, Fluid Dynamicist, National Aerospace Laboratory, 1880 Jindaiji, Chofu, Tokyo, Japan 182.

COUNCIL DECISIONS

STANDING COMMITTEES — 1987

A. Building Committee

The President — Chairman
Vice President (Delhi)

The Immediate Past President
The Treasurer
The Two Secretaries
The F.A. (DST)
The Rep. of Secretary (DST)
Shri J. R. Bhalla
Shri O. P. Jain
Professor P. N. Tandon
Professor Dinesh Mohan

B. Establishment/Finance Committee

The President — Chairman
Vice President (Delhi)
The Immediate Past President
The Treasurer
The Two Secretaries
The Two Editor of Publications
The F.A. (DST)
The Rep. of Secretary (DST)
Professor S. K. Joshi
Dr S. K. Sinha
Dr A. R. Verma

C. Grants, Symposia and Summer Schools

The President — Chairman
Vice President (Delhi)
The Immediate Past President
The Treasurer
The Foreign Secretary
The Two Secretaries
The Two Editors of Publications
Professor L. S. Kothari
Professor P. S. Ramakrishnan
Professor K. S. Valdiya

III Library Committee

The President — Chairman
Vice President (Delhi)
The Immediate Past President
The Two Secretaries
The Two Editors of Publications
The Treasurer (Fellow in Charge, Library)
Dr A. Jain (NISTADS)
Professor K. L. Chopra
Professor C. M. S. Dass
Professor P. C. Kesavan

D. Publication Advisory Board

The President — Chairman
Vice President (Delhi)

The Immediate Past President
The Two Secretaries
The Treasurer
The two Editors of Publications
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Shri R N Sharma
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Professor Madhav Gadgil

REGULATIONS REGARDING

Professor L S S Kumar Memorial Award

(Established in 1986 out of an endowment of Rs. 10,000 by Mrs K Kumar, widow of Professor L S S Kumar to commemorate the memory of Professor L S S Kumar).

1. Name of the Award

The Award shall be called '**Professor L S S Kumar Memorial Award**'.

2. Eligibility and Value

The award shall be given to a recipient of INSA Medal for Young Scientists for the year in the disciplines of Plant Sciences (Sectional Committee-VI), Animal Sciences (Sectional Committee-VII) and Agriculture (Sectional Committee-X) by rotation, i.e. first award will be made to Plant Sciences, second to Animal Sciences and the third to Agricultural Sciences and the cycle would repeat. In case of more than one person being recommended by the Sectional Committee for the award of INSA Medal for Young Scientists, the person who is first in order of merit in the list shall be given the award. The award will consist of Rs. 1000.

3. Announcement and presentation of the Award

The name of the Scientist selected for the award shall be announced at the Annual General Meeting of the Academy and the award shall be presented at the time of the presentation of the INSA Medal for Young Scientists in January.

CALENDAR OF ACTIVITIES 1987

January

1 (Thu)	Medal Lectures	Bangalore
	Meeting of the Council	Bangalore
2 (Fri)	Medal Lectures	Bangalore
	Anniversary General Meeting	
3 (Sat)	Presentation of Medals to the recipients of INSA Medal for Young Scientists (1986)	Venue of ISCA Bangalore

March

16 (Mon)	Meeting of the National Committee for ICSU	INSA, New Delhi
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April

27 (Mon)	Meeting of the Sectional Committees	INSA, New Delhi
28 (Tues)	Meeting of the Sectional Committees (Contd.)	INSA, New Delhi
29 (Wed)	Meeting of the Sectional Committees (Contd.)	INSA, New Delhi

May

11 (Mon)	Scientific Lectures Discussion Meeting	Nainital
	Meeting of the Council	Nainital
12 (Tues)	Meeting of the Council (Contd.)	Nainital
	Ordinary General Meeting	Nainital

June

24 (Wed)	Last date for receipt of suggestions for filling up the vacancies in the Council and Sectional Committees.	
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August

3 (Mon)	Special Symposia Discussion Meeting	Hyderabad
4 (Tues)	Meeting of the Council	Hyderabad
5 (Wed)	Meeting of the Council (Contd.)	Hyderabad
	Ordinary General Meeting	Hyderabad

October

5 (Mon)	Meeting of the Council	INSA, New Delhi
	Scientific Lectures	INSA, New Delhi
	Annual General Meeting	INSA, New Delhi

November

15 (Sun)	Last date for receipt of nominations for consideration of election to Fellowship 1988 and INSA Medal for Young Scientists 1988.	
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ENTRIES UNDER "FELLOWSHIP" INSA YEAR BOOK 1987

The Mss of INSA Year Book 1987 is under preparation. Fellows are requested to communicate modifications, if any, to the entries to be printed under "Fellowship" in the Year Book 1987.

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AN ANNOUNCEMENT

Under the NRC IDRC (Canada), programme, the Indian National Science Academy has started receiving the following thirteen Canadian research journals for an initial period of three years. The Fellowship of the Academy and other research workers are free to use this facility. The journals are:

- 1) Canadian Journal of Botany
- 2) Canadian Journal of Biochemistry & Cell Biology
- 3) Canadian Journal of Chemistry
- 4) Canadian Journal of Civil Engineering
- 5) Canadian Journal of Computational Intelligence
- 6) Canadian Journal of Earth Sciences
- 7) Canadian Journal of Forest Research
- 8) Canadian Journal of Genetics & Cytology
- 9) Canadian Geotechnical Journal
- 10) Canadian Journal of Microbiology
- 11) Canadian Journal of Physics
- 12) Canadian Journal of Physiology and Pharmacology
- 13) Canadian Journal of Zoology

For further information, Contact : Sh. B. D. Ukhuil Librarian, INSA, Bahadur Shah Zafar Marg, New Delhi 110 002

Awards and Honours

Professor M G K Menon, FNA, FRS, past President of the Academy has been elected, **President-elect of the ICSU** in the General Assembly at Berne, Switzerland. He will take over from John Kendrew as the President of ICSU in September 1988.

Born on August 28, 1928, Professor Menon received his PhD Degree from the University of Bristol in 1953. He is the Science Advisor to the Prime Minister and the Member, Planning Commission. He is also the former Director, Tata Institute of Fundamental Research (1966-75); Chairman, Electronics Commission and Secretary to the Government of India, Department of Electronics (1971-78); Scientific Advisor to the Minister for Defence; Director General, Defence Research and Development Organisation and Secretary in the Ministry of Defence for Research and Development (1974-78); Director General, Council of Scientific and Industrial Research (1978-81); Secretary, Department of Science and Technology, Government of India (1978-82); Secretary, Department of Environment, Government of India (1980-81); Chairman, Commission for Additional Sources of Energy, Government of India (1981-82) and Science Advisory Committee to the Cabinet (1982-84).

Prof. Menon's research work at Bristol on the development of the nuclear emulsion technique, particularly relating to the scattering method and the use of large stripped emulsion stacks demonstrated for the first time, the existence of muons of varying energies, monoenergetic, high energy charged pions, and electrons, as secondaries in the decay of heavy mesons, leading to the establishment of ku^+ , ku^- and ke^+ modes of decay of K mesons and the first demonstration of scattering phenomena involving the K particles and

discussion of these in terms of the "strangeness" concept. He was responsible for the development of the high altitude balloon programme at TIFR to a point where it became a dependable facility for primary cosmic ray work. For over two decades he has been involved in deep underground observations in the Kolar Gold Fields. Significant results which have emerged from this work are: the most extensive observations on the intensities and angular distributions of muons underground; observations on the so called multi particle "Kolar events"; evidence that the Utah claims could not be correct about the absence of the $\sec \theta$ effect implying that muons are significantly produced directly at high energies; first observation of interactions of natural neutrinos; and first observation of candidate events including high quality fully confined events suggestive of nucleon decay with a life time of $\sim 10^{31}$ years.

Professor E C G Sudarshan, FNA, Director, Institute of Mathematical Sciences, Madras have been awarded the **1985 Physics Prize** by the Third World Academy of Sciences (Trieste, Italy).

Professor C N R Rao, FNA, FRS, Director, Indian Institute of Science and President, Indian National Science Academy have been awarded **NCERT Silver Jubilee Award** of the National Council of Education Research & Training (New Delhi) and **DSc (Honoris Causa)** of the Banaras Hindu University (Varanasi).

Dr M S Swaminathan, FNA, FRS, Director General, International Rice Research Institute, Philippines, Manila has been awarded the **1986 Albert Einstein World Award of Science** of the World Cultural Council.

The ICSU Scheme

The Indian National Science Academy invites applications under the ICSU scheme from the deserving scientists for providing them partial financial support to participate in important International Conferences abroad during 1987-88. Scientists interested to avail of financial support of the Academy for participation in International Conferences to be held during 1987-88 are requested to apply in the prescribed proforma which could be obtained from the Office of The Executive Secretary, Indian National Science Academy, Bahadur Shah Zafar Marg, New Delhi-110 002.

The grant scheme operates under three different categories viz.: **Category I:** For International Conferences sponsored by the International Council of Scientific Unions (ICSU) and its affiliated bodies, hence categorised as ICSU Conferences; **Category II:** For International Conferences sponsored by other agencies, hence categorised as Non-ICSU Conferences; **Category III:** For applicants who are interested for partial travel assistance only, for participation in any International Conference abroad and are also below 35 years of age are categorised under DSA-COSTED Travel Grant.

Category I: Scientist who has been invited to deliver plenary lecture preside over session or whose paper has been accepted for presentation, and who will also be provided maintenance allowance during his/her stay abroad and partial travel by some agency, will be given preference over others. INSA's financial support, in case of selection, is limited to a maximum of half international travel, half maintenance allowance for the duration of the conference, registration fee, wherever necessary. The prescribed application form duly filled in should be despatched latest by

31st January each year for consideration at the meeting to be held subsequently during the year.

Category II: Scientist who has been invited to deliver plenary lecture preside over session or whose paper has been accepted for presentation and who will also be provided maintenance allowance during his/her stay abroad and partial travel by some agency, will be given preference over others. INSA's financial support in case of selection is limited to a maximum of Rs. 5,000 only.

Applications for Category II should be received in the Academy for consideration three months prior to the date of commencement of the Conference.

Category III: Under this category the scientist who is interested to avail partial travel assistance only, for participation in any International Conference and is also below 35 years of age may send his/her formal request on prescribed application form at least three months prior to the date of commencement of the conference. The applicant should fulfil the following obligatory criteria before sending his/her application:

(a) His/her age should be below 35 years on the date of commencement of the conference.

(b) His/her paper should have been accepted for presentation.

(c) His/her local hospitality and partial travel has to be borne by the organisers or some other agency.

Candidates selected will be supported partially for their travel cost, jointly by INSA and COSTED (Committee on Science & Technology in Developing Countries). The applications will be screened once a quarter during the year.

INSA Delegation to XXI ICSU General Assembly

A six member INSA delegation led by Professor C N R Rao, President, INSA attended the XXI General Assembly of ICSU held at University of Berne, Berne, from September 14-19, 1986. The other members of the delegation were Professor M G K Menon, Professor H Y Mohan Ram, Dr T N Khoshoo, Mr S K Sahni and Mr A K Tagore. More than 250 delegates from 53 countries participated in the above assembly which is held almost every alternate year in any one of the member countries. The Swiss Academy of Sciences hosted the above General Assembly and the University of Berne were responsible for all organizational arrangements etc.

The inauguration ceremony of the General Assembly was held in the afternoon of September 14. The opening address was delivered by Sir John Kendrew, President, ICSU. The Assembly had lengthy deliberations on various matters spread through September 15-19. Several important decisions were taken during the course of the General Assembly. One of them was the election of **Professor M G K Menon as President-elect ICSU**. Professor Menon will take over as President, ICSU for four years from Sir John Kendrew after the next General Assembly which is likely to be held in China during September, 1988. The General Assembly recommended to launch as International Geosphere—Biosphere programme: a study of Global Change. This programme will continue to the end of this century and will include a wide range of studies of the environment of our Planet and the changes, both natural and man made, that are taking place. The other important decision taken was to create a Scientific Committee on Biotechnology which is to coordinate ICSU's diverse activities in this field. The two afternoon sessions were devoted exclusively to Symposia, namely (1) Symposium on Consequences of Nuclear War and (2) Symposium on Global Changes. Besides these, two invited lectures were held in the other afternoons on (1) International Cooperation in Space Research: Comet Halley and after and (2) Cell Biology: Today and Tomorrow.

NOMINATIONS FOR INSA AWARDS : 1987

Nominations are invited for the following awards due in 1987 :

A. Subjectwise Medals

1. **the Homi J Bhabha Medal—**
Experimental Physics
2. **The Sunder Lal Hora Medal—**
Plant and Animal Sciences
3. **The P C Mahalanobis Medal—**
Engineering & Technology
4. **The K R Ramanathan Medal—**
Atmospheric Sci. and Meteorology

B. Endowed Medals

1. **The Chandrakala Hora Memorial Medal—***Development of fisheries, aquatic biology and related areas in India during the five years.*
2. **INSA Vainu Bappu Memorial Award—**
Awarded to an astronomer, astrophysicist of international recognition.

C. Academy Lecture

1. **The K S Krishnan Memorial Lecture—***Any branch of natural science*

D. Endowed Lecture

1. **The B C Guha Memorial Lecture—**
Biochemistry, Nutrition, Food and allied problems

E. Endowed Prize

1. **INSA Prize for Materials Science**

Nominations in the prescribed form must reach the Executive Secretary, Indian National Science Academy, Bahadur Shah Zafar Marg, New Delhi 110002 on or before **15th November 1986**.

National Register of Foreign Collaborations

One of the basic objectives of the Technology Policy Statement (TPS) is to achieve self reliance in the field of technology through the development of indigenous technology and efficient absorption & adaptation of imported technology appropriate to national priorities and resources. However, the TPS clearly states that we must take the advantage of technological developments elsewhere through well defined collaborative arrangements. To this end, it envisages the setting up of a National Register of Foreign Collaborations (NRFC) to provide analytical inputs at various stages of technology acquisition.

The Department of Scientific and Industrial Research (DSIR) is concerned with the task of promoting and supporting the efforts for the overall development and transfer of technology in the country in cooperation with various ministries and organisations in India and abroad. The import of technology has considerable bearing and intimate relationship with the level of technology already existing in the country. To study different aspects of the acquisition of technology such as choice and source of technology; alternative means of acquiring it; its role in meeting a major felt need; selection and relevance of products; costs and related conditions etc., the DSIR is implementing the scheme of the NRFC. Apart from providing useful inputs to the decision making organisations based upon sound information analysis, it will also undertake to advise objectively the entrepreneur in acquisition of appropriate technology.

As per the present procedure relating to foreign collaboration approvals, a copy of the collaboration agreement, annual report etc., would be furnished to the DSIR also.

Objectives

The technology imports in India have grown rapidly. The number of Foreign Collaboration (FC)

approvals during the year 1985 has touched a figure of over 1000, against that of less than 300 in 1970s. The acquisition of foreign technology needs to be viewed in relation to specific contracted terms and conditions under which such technologies are being imported, in addition to other aspects.

The NRFC assumes even greater significance in context of acquisition and development of technology in relation to technology mission oriented approach.

The major objectives of the National Register of Foreign Collaborations are:—

- Undertake financial, economic and legal analysis set of data on FCs,

- Carry out a technology analysis of the imported technology and provide a state of the art technology in use in the country and status of implementation of collaborations.

- Provide the basis for a National Science Strategy wherever possible,

- In the long run lead to unpackaging of imported technology and a national strength to competitively purchase only selected components of technology,

- Coordinate with the Ministries of Industry, Commerce and Finance, etc., by providing technology data inputs,

- Facilitate more effective national participation with various international organisations such as UNCTAD, UNIDO, ESCAP, etc., and in the international exchange of information and cooperation with other developing countries.

Functions

Thus in accordance with the objectives laid out above, besides the functions of a directory, the

NRFC has a major role to play in analysing the diverse aspects of imported technology. Its main function would thus be an analysis of imported technologies from various angles such as financial, economic, legal and technological. It would also endeavour to study the unpackaging of the technology components to avoid their repetitive import. In the course of time it should be possible for the Register to advise entrepreneur in important issues involved in any intended technology import.

The import of technology into the country is not limited to those obtained through foreign collaborations of industrial units only. Even in the industrial sector this is only the most visible form. Other forms such as, import of drawings and designs modernisation under TDF scheme, large scale import of capital goods, engagement of experts etc, do play a significant part in introducing new technology in the country. FERA companies and branches of foreign companies introduce technology in the country by diversification or expansion of their activities. The new activities of such companies could also be monitored to assess the technological inputs coming into the country. Besides the industrial sector, there are large inputs of technology to the other sectors through the UN/Internationally funded programmes, Bilateral assistance programmes, training abroad of Indian personnel, placement of advisers/experts in the country etc. It would be desirable to study, evaluate and monitor all of these inputs of technology in the country. However, it would be relatively easy to devise mechanism to cover the industrial sector because of the visible and direct nature of inputs.

Proposals Invited

A two-tier system of analysis is proposed to be adopted—a general analysis of all collaborations and a detailed analysis for specific and important technologies. These analyses would broadly cover the following:—

- Technical specifications of the product.
- Standing/reputation of the collaborator.
- Terms of payment.
- Conditions governing the collaboration agreement.
- Import of raw material/components and their sources.
- Deputation of experts/advisers to India.
- Training of Indian personnel.
- Role of different contractors & consultants in the technology transfer.
- R & D efforts (in-house, national R & D, Commercial R & D, etc.) for absorption, assimilation and adaptation of imported technology.

The DSIR will support partially/fully projects which can help in the pursuits of the NRFC. A list of areas/products for analysis on priority basis has already been identified in consultation with other Administrative Ministries/Departments. Interested Organisations/Institutions can submit well-defined proposals on contractual basis with clear-cut objectives for consideration by the DSIR.

For details and further information, write to or contact DSIR (NRFC).

* * * CURRENT AWARENESS SERVICE

In accordance with the decision of the Library Committee, a new service called 'Current Awareness Service' has been introduced from January, 1986. Under this scheme, INSA Library sends contents pages of selected journals to interested Fellows. A Fellow can be provided a photocopy of the articles of his interest which he may indicate after going through the current contents of the journal of his choice. The number of such journals from which a Fellow can make his choice is restricted owing to financial and personnel limitations. The service is currently available to Fellows on payment of annual subscription of Rs 50/- as notified through the circular letter dated November 1, 1985. The scheme is again brought to the notice of the Fellowship so that his service can be utilised by larger number of scientists. For further information: contact Mr B D Ukhul, Librarian, Indian National Science Academy, Bahadur Shah Zafar Marg, New Delhi-110002.

BIOGRAPHICAL MEMOIRS OF THE FELLOWS OF THE ACADEMY

The memoirs of the following Fellows have been published in Volume XI of the Biographical Memoirs.

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|-------------------------------------|----------------------------------|
| 1. Priyadarajan Ray | S D Chatterjee and D Banerjea |
| 2. Phanindra Chandra Dutta | R V Venkateswaran and U R Ghatak |
| 3. Ramanlal Chhaganla Shah | Suresh Sethna |
| 4. Satyendra nath Chakravarti | S Swaminathan |
| 5. Rango Krishna Asundi | N A Narasimham |
| 6. Arthur Lennox Coulson | A K Dey and A K Ghosh |
| 7. Satya Swaroop | C Chandrasekaran |
| 8. Amulya Chandra Ukil | S C Seal |
| 9. John Alexander Sinton | Richard Christophers |
| 10. Nibaran Chandra Chatterjee | P K Sen Sarma |
| 11. Hem Singh Pruthi | R K Bhanotkar |
| 12. Tiruvadi Sambasiva Venkataraman | J Thuljaram Rao |
| 13. Srinivasa Ramanujam | N Parthasarathy |
| 14. Ponani Narayana Ganapati | R Nagabhushanam and R Sarojini |
| 15. Ajudhya Nath Khosla | Jai Krishna |

PUBLICATIONS OF THE ACADEMY

(For details please contact Associate Editor, INSA)

Proceedings

Part A (*Physical Sciences*), **Part B** (*Biological Sciences*)

First issued in 1935 as a single volume for both branches, split into two series in 1955.

Periodicity : Monthly (six issues of each part in a year)

Annual Subscription (including postage)

Inland : Rs 300/- (Rs 150/- per part)

Indian Journal of Pure and Applied Mathematics

Devoted primarily to original research in Pure and Applied Mathematics. First issued in January 1970.

Periodicity : Quarterly up to 1971, bimonthly in 1972 and as a monthly journal from 1973.

Annual Subscription (including postage)

Rs 300/-

Biographical Memoirs of the Fellows of INSA

Contains memoirs on the deceased Fellows of the Academy. First issued in 1966 and priced individually.

Eleven volumes have been published so far. The next volume is in print.

Monographs

First issued in 1960 and priced individually.

Bulletins

Contain proceedings of the symposia. First issued in 1952 and are priced individually. The papers read at the symposium are now being published in the Proceedings also.

Popularisation of Science

Famous Plants by B M Johri & Sheela Srivastava. Rs 7.50; \$2.50

Year Book

A handbook on the origin, functioning, activities, and rules & regulations of the Academy. First issued in 1960 and priced individually.

INSA Scientific Report Series

5 volumes have been published since 1978.